WWII codebreakers supplied fateful intelligence for Allies

Fred Post 11/17/90

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Fifty years ago — and more than a year before Pearl Harbor — Americans scored one of their most brilliant victories of World War II.

The commander was a Russian immigrant and sometime geneticist named William Frederick Friedman. Friedman's troops were a motley assemblage of academics, math wizards and puzzle freaks. With a left-handed assist from William Shakespeare.

Together, after 18 baffling months of dead-end days and floor-walking nights, they broke the Japanese diplomatic code.

Their collective genius did not foil, of course, the sneak Japanese attack on Pearl Harbor that brought the United States actively into the war. But codebreaking by Friedman, et al, laid the groundwork for the pivotal victory of the U.S. fleet at Midway in June 1942 and the Allies' ultimate triumph.

The story starts in 1913 with Herbert O. Yardley, 24, a $17.50-a-week State Department code clerk.

Yardley had been an indifferent student but had a flair for math. Today he would have become a computer hacker. Back then he was bored. So bored he began cracking incoming code traffic. He deciphered a message to President Woodrow Wilson from his top aide, Col. Edward M. House, in two hours. He joined Army intelligence in World War I as a lieutenant and cryptographer.

The Army had another such lieutenant, Friedman. He had been born near Odessa in 1891, was brought to America by his father to escape anti-Jewish rioting and eventually graduated from Cornell University as a geneticist.

He took work at Riverbank Laboratories in Chicago, hired by wealthy eccentric Col. George Fabyan.

Of Fabyan's passions was to prove that Sir Francis Bacon was the real author of Shakespeare's plays and sonnets. He had only to decipher the code he believed Sir Francis had encrypted in "Troilus and Cressida" to prove his theory and thereafter bask in the world's acclaim. He had hired two codebreakers: Mrs. Elizabeth Wells Gallup and her assistant, Elizebeth Smith.

After Friedman arrived in 1915, he became fascinated with Miss Smith and cryptology. He married both for life.

While Sir Francis's hidden messages kept eluding Mrs. Gallup, the Army began sending cryptograms and coded messages to Riverbank for deciphering. Friedman broke one, keyed from a book, without even knowing what the book was. Impressed, the Army enlisted him into its primitive code apparatus when World War I broke out.

After the war, Friedman returned to Riverbank. He went back into service when the Army wanted him in 1921 to work up its codes. Mrs. Friedman eventually worked for the Coast Guard cracking codes of Prohibition rumrunners.

The government, meanwhile, set up Yardley in secret in mid-town Manhattan to run a codebreaking operation he called the Black Chamber. His first coup was to crack the codes the Japanese delegation was using at a 1921 Washington Naval conference.

Not to be outdone, the Navy in 1924 appointed Lt. Laurence F. Safford to head a new Research Desk in the Code and Signal Section. In the finest tradition of interservice rivalry, Safford's unit in the Navy Building never communicated what it was doing to the Army Building next door on Constitution Avenue in Washington.

The lack of communication slowly changed, however, in the face of a technological revolution: Radio.

Radio direction finding — pinpointing the source and destinations of coded messages through triangulation — had entered the arsenal of modern warfare.

Codebreaking had become an intense activity, so much so that Yardley's Black Chamber had broken the codes of 19 nations by the time Henry L. Stimson became Herbert Hoover's secretary of state in 1928. By then State was financing Yardley exclusively. Stimson was aghast.

Even though Japanese militarists were already clashing with Chiang Kai-shek's soldiers in China, Stimson closed down the Black Chamber with one of the most famous quotes in all cryptography: "Gentlemen do not read each other's mail."

In reaction, the Army created a new Signal Intelligence Service under Friedman to prepare codes, locate enemy radio stations and break ciphers. And Friedman began talking with Safford.

For his part, an angry Yardley told all in a 1931 best-seller, "America's Black Chamber." His book was his last, greatest and wholly unintended gift to American cryptology. It persuaded the Japanese to start using encrypting machines.

These were nothing new. An electrical enciphering machine named Enigma was sold for commercial users in Germany after the first war and in 1927 the Army Signal Corps bought one. It became the Nazis' Achilles heel throughout World War II. They complacently believed Enigma unbreakable. But the British, with the help of some brilliant Poles, cracked it, giving the Allies a fateful advantage.

The Japanese had the same confidence in 97-shiki O-bun Injiki — Alphabetical Typewriter 97. The Americans called the machine Purple. They had already broken a Japanese machine they called Red.

Cracking Red came with the help of an accommodating woman provided by the Office of Naval Intelligence who tarried in bed with Lt. Toshikazu Ohmae while agents rifled his briefcase. Then, a much more sophisticated machine, Purple, began to be intercepted by the Navy's listening radios.

Capt. Jinsaburo Ito of the Japanese Navy had developed No. 97. "Let America and Britain solve this cipher if they can," he said. Friedman's staff of 19 codebreakers was given the challenge.

Codebreakers, to say the least, do not come in tidy packages. America's cryptographers included stamp collectors, chess masters, a naval officer who accepted a tennis date knowing nothing of the game but learned it overnight from a book. Mrs. Agnes Meyer Driscoll, who was a devotee of cryptic puzzles, taught many the tricks of the trade. And Friedman, who could see patterns where others saw only chaos.

Purple, in a world edging toward war, was something else.

Only in the major Japanese embassies could use Purple. On Feb. 18, 1939 Tokyo signalled these outposts Purple was going on line. It made the fatal error of sending parallel messages on the Red machine to lesser consulates. Comparing the two, Friedman's crew decrypted 25 percent of the cipher in a few weeks. Thereafter: a brick wall.

Little steps, nonetheless, could be taken. The Japanese, a formal people, stick to proper and unvarying ways of address. Diplomatic messages, encoded, could be compared with the same messages when delivered to American diplomats in translation — if they were the same messages. Messages sent in Red were compared with Purple intercepts made about the same time.

Safford's people kept up a steady flow of radio intercepts. Japanese diplomacy sometimes came via American commercial cable companies instead of by radio. Rights to privacy notwithstanding, cable managers would pass on copies and times of transmission.

Then, sometime in August 1940, Harry Laurence Clark, one of Friedman's young cryptographers, had an insight that came to him in the night. He came to work the next day ecstatic.

"I wonder if the monkeys did it that way?" he is quoted by Friedman's biographer, Ronald Clark. "That way" was to use telephone stepping switches in the Purple machine, not electric wheels.

Friedman's crew began scrounging switches from telephone companies, even five-and-dime stores. By guess and by God and by genius they began piecing together a copy of the machine none of them had ever seen nor ever would see and which was talking in a language few of them knew.

It buzzed and sparked and wasn't lovely, but on Sept. 25, 1940, America's Purple machine decoded its first full message. Washington, again, could read Tokyo's hand.

As the Japanese Empire inexorably collapsed in on itself in flames, Purple machines were smashed into bits as embassies closed, garrisons surrendered or, more often, fought to the last man. One machine, partially intact, was captured on Guam. Of its hundreds of wired connections, only two were different from the sight-unseen Purple machines of William F. Friedman and his crew.

Even after the war was over, the Japanese refused to believe what the Americans had done. No, they said, they must have stolen a Purple machine somewhere.

They had. Out of the air.